

What is claimed is:

1. A device for preparation of a drink having a fine crema layer with pressurized hot water comprising:

a container for receiving flavor-containing materials and allowing the materials to interact with pressurized hot water to produce a drink under pressure;

a sufficiently small orifice for converting the drink under pressure from said container into a drink jet at a sufficiently high speed;

a reflector for receiving the drink jet and implanting air into the drink to produce an emulsified drink, said reflector being positioned a predetermined distance below said orifice, said predetermined distance being sufficiently long to prevent the sputtered drink droplets generated when the drink jet is received by said reflector from disrupting the formation of the drink jet at sufficiently high speed by said orifice and being sufficiently short to allow the drink jet to maintain its sufficiently high speed when the jet reaches said reflector;

a channel for conducting the emulsified drink produced by said reflector into at least one receptacle, in which the emulsified drink develops a fine crema layer on top of the drink;

wherein said orifice and reflector are adapted to enable said drink jet to travel freely in a substantially empty or vacuum air space before said drink jet reaches said reflector; and

wherein said reflector and channel are constructed to enable said channel to deliver the drink received by said reflector away from said reflector sufficiently quickly to prevent building-up of the drink on said reflector to minimize the time needed to drain the device at the end of a brewing process, thereby significantly reducing the time needed to prepare a cup of drink.

2. A device as defined in claim 1 wherein said channel is sufficiently sloped for quickly delivering the drink received by said reflector away from said reflector to render said reflector substantially free of the drink during a brewing process.

3. A device as defined in claim 1 wherein said channel is sufficiently short and large to cause substantially no pressure loss to the drink flow therein, said channel being located immediately adjacent to said reflector, thereby rendering said reflector substantially free of the drink during a brewing process.

4. A device as defined in claim 1 wherein the pressure of the hot water delivered to said container is lower than 3 bars, and wherein said orifice has a cross-section area smaller than 0.00067 inch² in order to cause continuous transformation of the drink jet into said emulsified drink.

5. A device as defined in claim 1 wherein said reflector comprises a roughened surface for facilitating the continuous transformation of the drink jet into said emulsified drink.

6. A device as defined in claim 1 wherein said reflector comprises at least one protrusion positioned to allow the drink jet to be received by said protrusion.

7. A device as defined in claim 6 wherein said at least one protrusion is dimensioned and located to cause part of the drink jet to not touch the top surface of said at least one protrusion.

8. A device as defined in claim 1 wherein said reflector has a sufficient slope to render it substantially free of the drink and emulsified drink during a brewing process.

9. A device as defined in claim 1 wherein said channel is adapted to cause the emulsified drink to flow to the side wall of the at least one receptacle for improving the fineness of the crema in the at least one receptacle.

10. A device as defined in claim 1 wherein said container comprises a filter attached to said container, a supply of flavor-containing materials above said filter and a support downstream said filter for supporting said filter and directing the drink from the said filter to said orifice, wherein said container, reflector and filter is adapted to be sufficiently inexpensive to make the device disposable.

11. A device for preparation of a drink with pressurized hot water comprising:

a container for receiving flavor-containing materials and allowing the flavor-containing materials to interact with pressurized hot water to produce a drink under pressure therein;

a collector for collecting the drink under pressure produced in said container;

a sufficiently small orifice for converting the drink in said collector under pressure into a drink jet at sufficiently high speed; and

a crema modulator downstream said orifice for controlling the generation of crema, said modulator comprising a fluid control member having an opening sufficiently larger than said orifice to allow said drink jet to pass through substantially freely when said orifice and opening are aligned, a handle for a user to move said fluid control member and an engagement member for preventing the drink pressure from moving or dislodging said fluid control member, said fluid control member being adapted to move between a first position, in which said orifice and opening are sufficiently aligned to allow the drink jet to pass through said opening freely to maintain its sufficiently high speed for the generation of crema, and a second position, in which said orifice and opening are sufficiently mis-aligned to prevent the drink jet from generating crema.

12. A device as defined in claim 11 wherein said modulator and said orifice are adapted to cause the free space between said opening and orifice to be filled with the drink during brewing process when said fluid control member is in its second position.

13. A device as defined in claim 11 wherein said container comprises a second handle, and wherein said handle of said modulator comprises a pointing member located adjacent to said second handle and a connector for connecting said pointing member to said fluid control member, said handle and second handle being adapted to enable a user to change said fluid control member from said first position to second position by moving said pointing member relative to said second handle.

14. A holder for preparation of a drink with pressurized hot water comprising:

a container for receiving flavor-containing materials and allowing the flavor-containing materials to interact with pressurized hot water to produce a drink under pressure;

a collector for collecting the drink under pressure produced in said container; and

a cup modulator located downstream of said collector for a user to change the volume of drink to be brewed from the flavor-containing materials in said container, said cup modulator comprising a fluid control member, a handle for a user to move said fluid control member and an engagement member for preventing the pressure of the drink from moving or dislodging said fluid control member, said fluid control member being adapted to move between a first position, in which it causes a first volume of drink to be prepared and discharged into a receptacle in a predetermined period of time, and a second position, in which it causes a second volume of drink to be prepared and discharged into a receptacle in said same predetermined period of time, said fluid control member being so constructed that said second volume of drink is significantly larger than said first volume of drink, thereby enabling said holder to produce different volumes of drink by simply moving said handle.

15. A device as defined in claim 14 wherein said cup modulator further comprises an outlet for said collector and wherein said fluid control member comprises a plurality of openings having different flow resistance, said outlet and said fluid control member being adapted to allow a user to connect a first one of said plurality of openings to said outlet by moving said fluid control member to said first position and a second one of said plurality of openings to said outlet by moving said fluid control member to said second position via said handle.

16. A device as defined in claim 14 wherein said modulator further comprises a first opening and a second opening for the drink, and wherein said fluid control member closes said second opening at least partially when in said first position.

17. A device as defined in claim 14 wherein said modulator further comprises an outlet for said collector and wherein said fluid control member comprises a flow restriction member for changing the flow resistance of the drink through said outlet, said flow restriction member is adapted to cause higher flow resistance when said fluid control member is at said first position and lower flow resistance when said fluid control member is at said second position.

18. A device as defined in claim 14 further comprising one of a pouch and capsule permeable to water to enclose the flavor-containing materials, said one of pouch and capsule and flavor-containing materials being adapted to have sufficiently low resistance to hot water flow to allow the movement of said fluid control member from said first to second position to significantly change the volume of hot water through said one of pouch and capsule.

19. A device as defined in claim 14 wherein said container comprises a second handle, and wherein said handle comprises a pointing member located adjacent to said second handle and a connector for connecting said pointing member to said fluid control member, said handle and second handle being adapted to enable a user to change said fluid control member from said first position to second position by moving said pointing member relative to said second handle.

20. A device for preparation of a drink with pressurized hot water comprising:

- a container for receiving flavor-containing materials and allowing the flavor-containing materials to interact with pressurized hot water to produce a drink under pressure therein;

- a water heating and delivery system for heating and delivering hot water to said container, said system being adapted to deliver the hot water to said container at lower volume flow rate as the flow resistance downstream increases;

- a timer for allowing said system to deliver hot water to said container for a predetermined amount of time and for stopping the delivery after said predetermined amount of time; and

- a cup modulator comprising a fluid control member, a handle for a user to move said fluid control member and an engagement member for restricting the movement of said fluid control member by the pressure of the drink, said fluid control member being adapted to move between a first position, in which it causes a first volume of drink to be prepared and discharged into at least one receptacle in said predetermined period of time, and a second position, in which it causes a second volume of drink to be prepared and discharged into at least one receptacle in said predetermined period of time, said fluid control member being so constructed that said second volume of drink is significantly larger than said

first volume of drink, thereby enabling said device to produce different volumes of drink by moving said handle.

21. A device as defined in claim 20 wherein said cup modulator further comprises a first opening and a second opening, and wherein said fluid control member closes said second opening at least partially in said second position.

22. A device as defined in claim 20 wherein said cup modulator further comprises a fluid opening and wherein said fluid control member comprises a plurality of openings having different flow resistance, said fluid opening and said fluid control member being adapted to allow a user to connect a first one of said plurality of openings to said outlet by moving said fluid control member to said first position and a second one of said plurality of openings to said outlet by moving said fluid control member to said second position via said handle.

23. A device as defined in claim 20 wherein said cup modulator further comprises a fluid opening and wherein said fluid control member comprises a flow restrictor for changing the flow resistance through said fluid opening, said flow restrictor is adapted to cause higher flow resistance when said fluid control member is at said first position and significantly lower flow resistance when said fluid control member is at said second position.

24. A device for preparation of a drink with pressurized hot water comprising:

a container comprising a chamber for receiving a pod comprising a supply of flavor-containing materials sandwiched between two thin porous sheets and for allowing the materials to interact with hot water to produce a drink, a top end having a sealing surface around said chamber, a plurality of collection channels for the drink from the pod, a collector the drink from said collection channels, and a discharging opening for the drink in said collector;

a body comprising an upper end for receiving the drink from said discharging opening, a drink channel comprising a sufficiently sloped bottom surface adapted to cause the drink to flow under gravity along said drink channel, and a lower end for discharging the drink from said sufficiently sloped bottom surface into a cup for consumption;

wherein said sealing surface around said chamber is adapted to form a watertight seal directly to the brew head of a coffee machine capable of generating and delivering hot water under pressure to and through the materials in said pod; and

wherein at least one of said porous sheet is permanently attached to said container.

25. An assembly for use in a coffee machine for preparing a drink comprising:

a container having a bowl-shaped inner space bounded by a bottom and a side wall and, included in said inner space of said container, a pill-shaped pouch or pod manufactured from thin porous filter and filled with flavor-containing materials, which pod rests on said bottom and extends over said bottom to said side wall of said container, and wherein in use, hot water is fed under pressure to a top side of said container by the delivery system of the coffee machine, causing the hot water to be pressed from a top side of the pod through the pod for interacting with the flavor-containing materials included in the pod to produce a drink;

a collector located at said bottom of said container for collecting the drink from a bottom side of the pod; and

a pressure modulator located on said holder for modifying the brewing pressure for the flavor-containing materials in the pod, said modulator comprising an outlet channel for the drink in said collector, a fluid passageway having a first end located on said container upstream of the pod and a second end located on said holder downstream of the pod, a fluid control member, a handle for a user to move said fluid control member and an engagement member for preventing the drink pressure from the moving or dislodging said fluid control member, said fluid control member being adapted to move between a first position, in which it restricts the hot water at said first end from reaching said second end of said fluid passageway to achieve a higher brewing pressure for the flavor-containing materials in the pod, and a second position, in which it allows the hot water at said first end to reach said second end via said fluid passageway with significantly less restriction to achieve lower brewing pressure for the materials in the pod.

26. An assembly as defined in claim 25 wherein said outlet channel comprises a top end open to said collector and a lower end constituting said second end of said fluid passageway for discharging the drink, and wherein said fluid control member comprises a first restrictive channel for connecting said first end of said fluid passageway to said outlet channel when said member is in its first position and a second restrictive channel for connecting said first end of said fluid passageway to said outlet channel when said member is at its second position.

27. An assembly as defined in claim 25 wherein said fluid control member comprises a valve member located between said first and second ends of said fluid passageway for controlling the brewing pressure for the flavor-containing materials in said container.

28. An assembly as defined in claim 25 wherein said engagement member is adapted to allow said fluid control member to be removed from said holder for facilitating the cleaning of the said holder.

29. An assembly as defined in claim 25 wherein said container comprises a second handle, and wherein said handle comprises a pointing member located adjacent to said second handle and a connector for connecting said pointing member to said fluid control member, said handle and second handle being adapted to enable a user to change said fluid control member from said first position to said second position by moving said pointing member relative to said second handle.

30. An assembly device as defined in claim 25 wherein said fluid control member and the flavor-containing materials in the pod are adapted to cause at least one third of the hot water delivered to said container by the coffee machine to be pressed through the flavor-containing materials when said fluid control member is in said second position.

31. A holder for use in a coffee machine for preparing a drink comprising:
a container for receiving a pod or pouch containing flavor-containing materials and allowing the materials to interact with pressurized hot water to produce a drink under pressure;
a collector for collecting the drink under pressure produced in said container; and
a pressure modulator located on said holder for modifying the brewing pressure for the pod or pouch in the container, said modulator comprising an outlet channel for the drink in said collector, a fluid passageway having a first end located on said container upstream of the pod and a second end located on said holder downstream of the pod, a fluid control member, a handle for a user to move said fluid control member and an engagement member for preventing the drink pressure from the moving or dislodging said fluid control member, said fluid control member being adapted to move between a first position, in which it prevents or restricts the hot water at said first end from reaching said second end of said fluid passageway to achieve a higher brewing pressure for the flavor-containing materials in the pod, and a second position, in which it allows the hot water at said first end to reach said second end via said fluid passageway to achieve a lower brewing pressure for the flavor-containing materials in the pod.

32. A holder as defined in claim 31 wherein said outlet channel comprises a top end open to said collector and a lower end constituting said second end of said fluid passageway for discharging the drink, and wherein said fluid control member comprises a first restrictive channel for connecting said first end of said fluid passageway to said outlet channel when said member is in its first position and a

second restrictive channel for connecting said first end of said fluid passageway to said outlet channel when said member is at its second position.

33. A holder as defined in claim 31 wherein said fluid control member comprises a valve member located between said first and second ends of said fluid passageway for controlling the brewing pressure for the flavor-containing materials in said container.

34. A holder as defined in claim 33 wherein said fluid control member is received at least partly in said collector.

35. A holder as defined in claim 31 wherein said fluid control member is adapted to cause at least one fourth of the hot water delivered to said container by the coffee machine to be pressed through the flavor-containing materials when said fluid control member is in said second position.